Purpose/Objective: The scheme of standard radiotherapy for breast cancer treatment involves a high total dose in 25 fractions. However, a decrease in the total dose, together with an increase in the dose per fraction (hypofractionation) is discussed to be at least as effective as standard treatment. The objective of our study is to analyze the results in local control, acute and late toxicity and cosmetic outcome in patients treated with hypofractionated radiation therapy after conservative surgery for breast cancer in our center.
Materials and Methods: A retrospective analysis of all women diagnosed with breast cancer (Stage 0-III) and treated with breast-conserving surgery followed by hypofractionated scheme from 2006 to 2011. Total dose on mammary gland: 42.4 Gy to 2.65 Gy / fraction, for a total of 16 sessions with concomitant boost to 7.7 Gy (0.48 Gy / fraction). We included patients treated with chemotherapy, hormonal therapy and trastuzumab. Acute and late toxicities were scored according to the Common Terminology Criteria for adverse Events version 4.0 and cosmetic outcome were assessed during follow-up every three months up to 2 years and every six months up to 5 years after radiotherapy.
Results: We have treated 143 women with hypofractionated scheme. After a median follow up of 36 months, the local recurrence rate was 1.4%, only 3.5% experienced nodal relapse, one patient developed a contralateral breast cancer and 6.3% had distant metastases as first event. There was no acute toxicity in 28.4% of cases, being the most frequent grade 1 radiodermatitis (61.1%). Regarding late toxicity, this was not observed in 65.6%, being grade 1 fibrosis in the treated area the most common. The cosmetic outcome was good or excellent in 90% of patients treated. At the end of the study, 83.8% remained alive without disease, 7% alive with disease, 4.9% exitus due to tumor and 4.2% were died due to other causes.
Conclusions: The hipofractionated scheme after conservative surgery in breast cancer provides a good control of the disease without causing excessive toxicity and providing good cosmetic outcomes. Similar results to standard treatment can be obtained with a significant reduction in overall treatment time.

EP-1185

Breast cancer located in medial site is a candidate for regional nodal irradiation after breast conserving surgery

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Purpose/Objective: Early breast cancer treated with breast conservative therapy (BCT), usually has a good prognosis. Recommended target field of RT field is whole breast. However, added to the results from MA.20 about regional nodal irradiation (RNI) to patients with pN1 status, EORTC 22922/10925 reported the benefit of RNI for overall survival including internal mammary and medial supraclavicular lymph node chain especially in tumors situated in medial (=inner/central) site without axillary lymph node metastasis. Based on our long term date specifically focused on tumor site, we assessed the possible utilization of RNI for application guideline of breast cancer in Japan.
Materials and Methods: A total number of patients who were treated with BCT are 1200 in our institution. Patients with simultaneous bilateral breast cancer and non-invasive breast cancer were excluded. Cases with RNI were also excluded. 1079 cases out of 1200 treated with BCT until December 2012 were analyzed.
Median age at diagnosis is 53 years (range: 25-85). Major histological type is invasive ductal cancer (93.4%). Tumor sizes of origin was in T1; 65.0%, T2; 32.6%, and T3; 1.1%. Positive lymph node metastasis was seen in 24.7%. 37.6% of patients received chemotherapy, and 73.3% underwent hormone therapy. All patients were treated with postoperative whole breast RT, in which 37.8% received boost RT of 10-14Gy.
Results: Median follow up period was 120 months (range: 4-300). A number of tumors located in inner site was 393 (36.8%), and a number of tumors in outer site was 676 (63.2%). According to EORTC trial, centrally situated cases were regarded as inner cases at the analysis. Ten year overall survival rate was favorable (90.1% at inner site and 92.7% at outer site (p=0.189)), local recurrence free survival (LRFS) at inner/outer site were 90.1%/93.7% (p=0.79), distant metastasis free survival (DMFS) were 88.4%/90.1% (p=0.594), and disease free survival (DFS) were 72.9%/79.4% (p=0.03) respectively. Only DFS was significantly better in outer group.
In cases with positive nodes, LRFS, DMFS, and DFS were not significantly different between inner and outer sites. Notably in cases with negative nodes, LRFS/DFS/OS of inner situated cases were statistically significantly worse.
Conclusions: In current clinical practice, the whole breast RT is recommended to patients with inner situated tumors, however, especially in the patients with negative nodes, RNI should be considered as a state of the art strategy.

EP-1186

Neoadjuvant systemic therapy utilization in breast cancer; potential impact on nodal radiotherapy

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Purpose/Objective: Neoadjuvant systemic therapy (NAST) in breast cancer potentially down-stages disease, thereby posing challenges to the standard indications for nodal irradiation. We assessed the pattern of NAST utilization in our province and its effect on the recommendation for nodal radiotherapy (RT).
Materials and Methods: Of the 11,628 patients with stages I to III breast cancer from 2007-2012, 603 patients (5.2%) were treated with NAST. Data from our provincial database were obtained to determine relationships between NAST use and nodal irradiation.

Results: The median age of patients who received NAST was 52 years (range 25 - 91 years). 90% received chemotherapy, 64% were assessed with clinical and/or imaging studies, 34% had FNAs, and 2% had preoperative sentinel lymph node biopsies. All patients who had sentinel lymph node biopsies had clinically negative nodes. 91% of patients had nodal irradiation after NAST. On logistic regression analysis, NAST utilization was lower in 3 out of 5 centres compared with the largest centre ($p < 0.05$). Increasing tumour and nodal stage were the main predictors for NAST use (p-value <0.001). There was a decreased use of NAST with time compared to 2007, but this was not statistically significant (p-value 0.34).
Conclusions: Contrary to our initial hypothesis, there has not been a significant increase in NAST over time. Nodal irradiation is used in the majority of patients who received NAST. Clinical nodal status did not predict for subsequent nodal irradiation.

EP-1187

Comparing simultaneous integrated boost and sequential electron boost technique in radiotherapy for breast cancer

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Purpose/Objective: Comparison of acute radiotherapy side effects and dosimetric parameters between breast cancer patients receiving breast conserving radiotherapy using simultaneous integrated boost (SIB) and sequential electron boost technique.
Materials and Methods: 58 breast cancer patients who underwent Breast Conserving surgery and received adjuvant radiotherapy with either simultaneous integrated photon boost (SIB) or sequential electron boost technique were retrospectively selected. In the SIB group, 30 consecutive patients were treated with a total dose of 45.57Gy to the whole breast and 56.07 Gy to the tumour bed in 21 concomitant fractions from January to May 2013. In the electron group, 28 consecutive patients were treated with a total dose of 50Gy in 25 fractions to the whole breast followed by 16Gy in 8 fractions sequential electron boost to the tumour bed from January to April 2012. Skin toxicities were prospectively assessed during on-treatment follow up using RTOG skin toxicity grading. Boost volume and dose parameters to organ at risk were compared between the 2 groups.
Results: 6.67% and 28.6% of patients developed Grade2 or above skin toxicity by RTOG skin toxicity grading for SIB and electron group respectively (p=0.038). The mean boost volume was 64.2cm^3 and 202.9cm ^{3}for SIB and electron group respectively (p<0.001). There were no statistically significant difference between the mean lung dose :5.52Gy and 5.09Gy for electron and SIB group respectively (p=0.301) ; V20 for lung:9.16% and 8.14% for electron and SIB respectively (p=0.266) ; V10 for heart: 1.74% and 3.16% for electron and SIB group respectively(p=0.107).
Conclusions: Simultaneous integrated boost technique for adjuvant radiotherapy following breast conserving surgery has the benefit of a favorable acute toxicity profile, reduced number of treatment fractions and comparable dose to organ at risk with conventional sequential electron boost technique.

EP-1188

Single fraction HDR breast brachytherapy boost. Does the implant volume influences long term toxicity?

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Purpose/Objective: The dose-volume effect of radiotherapy on breast tissue is not well known existing conflicting results in the literature. Some studies suggest that there are higher rates of fibrosis in patients treated with large boosts and other studies downplay the impact of the implant volume, suggesting that what really determines the increase of fibrosis is the total dose of the boost and surgical factors like a poorly planned excision and a large volume of breast removed. Most of the studies that address these issues are old and usually boost large volumes of the breast, even more than 100cc. Current modalities of conservative treatment with tighter surgical margins and imaging techniques that allow us to localize the tumor bed more accurately have meant that the volumes of brachytherapy implants have decreased dramatically and this may have influence in toxicity. The purpose of the study was to evaluate if there is any relationship between the implant volumes with long term toxicity.
Materials and Methods: We evaluated all the patients who received a High Dose Rate (HDR) boost in our department after irradiating the whole breast following conservative surgery. In all patients an MRI of the breast was performed before surgery to determine the most appropriate surgical modality. We used this MRI and the planning CT (surgical clips, seroma) as a reference to perform the brachytherapy implant and minimize the boost volume.
Results: We treated 220 boosts with a mean following time of 14months (6-24mo). 87.7% breasts were previously treated under the hypofractionated scheme of the START B trial (40,05Gy/15fractions) and 12.3% were conventional treatments (50Gy/25 fractions). 50.9% were left breast cancers and the tumor bed was localized in upper external quadrant in 30%. 98.2% received 8Gy and 1.8% 10Gy. The mean implant volume of the isodose of the 90% of the prescribed dose was 8.19cc, 120%: 1.25cc, 150%: 0.16cc and 200%: 0.04cc. Prescription dose was based on the modified Paris dosimetry treatment. Chronically, fibrosis was absent or mild in 83.2%%. The remaining patients suffered from moderate fibrosis (grade 2). Only one case of grade 3 was reported. 7.3% of patients reported visible and palpable edema in the skin over the implant. We did not find a statistically significant relation between the implant volumes and the grade of long term fibrosis or edema.
Conclusions: HDR-BRT boost after whole breast irradiation is a safe and widespread technique to administer a breast boost in patients at risk, which is not exempt from suffering long term complications. In our retrospective study we couldn´t prove the relationship between the implant volume and long term toxicity (fibrosis and edema). Prospective studies comparing different boost doses and volumes are needed to